

Appl. No. 10/605,520  
Amtd. dated August 25, 2006  
Reply to Office action of May 26, 2006

### REMARKS

In response to the office action mailed on May 26, 2006 presented above, the applicant has provided the following response. Remarks are provided for each individual or related set of claims, with the Examiner assertions are headlined in bold italics.

5    Response to Claim Objections

*Claim 11 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 9.*

In accordance to the Examiners requests, claim 11 has been canceled from the above patent application without prejudice.

*Claim 24 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 22.*

10      In accordance to the Examiners requests, claim 24 has been canceled from the above patent application without prejudice.

*Claims 1, 2, 7, 20 are objected to because of the following informalities: these claims have spacing issues.*

15      In adherence to the Examiners objections, the spacing issues have been corrected in the above-described claims. Amendments made to the above claims are purely typographical in nature and do not alter the disclosed subject matter. Additionally, no new subject matter is introduced through the above amendments.

*Claims 1-26 are objected to because of the following informalities: Please check these claims for when the term 'subroutines' is written that it should actually be 'subroutine'.*

20      *Also check for the word 'executes' that it should be actually be 'execute'.*

In keeping with the Examiners requests, the various informalities described above

Appl. No. 10/605,520  
Amtd. dated August 25, 2006  
Reply to Office action of May 26, 2006

have been corrected in claims 1-26. Amendments made to the above claims are purely typographical in nature and do not alter the disclosed subject matter. Additionally, no new subject matter is introduced through the above amendments.

Appl. No. 10/605,520  
Amtd. dated August 25, 2006  
Reply to Office action of May 26, 2006

**Response to Claim Rejections**

*Claims 1-3, 6-16, and 19-26 are rejected under 35 U.S.C 102(b) as being anticipated by Gold et al. (US Patent 6058494)*

- 5       Applicant asserts that Gold et al. (Gold herein after) does not anticipate the present invention, as Gold does not teach “a plurality of higher-level subroutines, each higher-level subroutine(emphasis added) used for calling at least a lower-level subroutine to control the hardware circuit to execute operations corresponding to the lower-level subroutine...” as disclosed in the limitation of claim 1. Applicant points out that the
- 10      sequence of having higher-level subroutines call lower level subroutines is essential in reducing coding redundancy, optimizing management of subroutines, and reducing debugging complexity. As supported in paragraph [0016] of the present invention specification, “because there is a lack of effective management for invoked subroutines and error recovery in the prior art, the firmware code structure is lower readability and too
- 15      complex to trace and to debug, will consume considerable resources of the processor of the peripheral device, and will easily affect the normal operations of the peripheral device due to the lack of management for error recovery”. Applicant will illustrate with reference to individual claims below that Gold does not teach effective management for invoked subroutines, as Gold does not teach “a plurality of higher-level subroutines, each higher-level subroutine used for calling at least a lower-level subroutine”.
- 20

Regarding claim 1, the Examiner has stated that “*The lower-level subroutines are the third process*” and “*The higher-level subroutines are the first process and the second process*”. However, applicant points out that Gold does not teach the first process or the second process specifically for calling the third process, as disclosed in claim 1 of the present invention. Gold teaches that “a first process 242 monitors the status of predetermined functions.... and in response sets flags to indicate possible problems” (Col

Appl. No. 10/605,520  
Amtd. dated August 25, 2006  
Reply to Office action of May 26, 2006

3 line 65- Col 4 line 2) and “a second process 244 interprets the flags in a pre-determined manner” (Col 4 lines 2-3). The third process 246 acts independent of the other processes as Gold states “a third process 246 prioritizes the high level codes... and stores the results in an area of RAM” (Col 4 lines 5-8). Because Gold does not teach a direct relationship of either the first process 242 or the second process 244 calling the third process 246, the sequence of the miscellaneous processes in Gold can therefore operate in an arbitrary manner, which conflicts with key benefits achieved through teachings of the present invention. As stated in paragraph [0019] of the present invention application, “Since each higher-level subroutine invokes different lower-level subroutines to combine to form various control procedures, the invoke order can be effectively managed and is easy to control the nested executions of firmware code execution flow”.

In addition, applicant points out that Gold does not teach a plurality of lower-level subroutines. The Examiner has stated that “*The lower-level subroutines are the third process and the process disclosed in column 4, lines 9-10*”. However, (Col 4 lines 9-10 states “Once stored, the high level codes may be forwarded to the host computer 12”. Applicant points out that the “high level codes” referred to by Gold are not subroutines, but are system status codes (Col 3 line 67). Therefore, Gold does not teach a plurality of lower-level subroutines as disclosed in claim 1 of the present invention.

In view of the above-described reasons, applicant respectfully requests reconsideration for the allowance of claim 1.

25

Regarding claims 2 and 15, applicant asserts that Gold does not necessarily teach “the processor will not execute the recovery operations...until the higher-level

Appl. No. 10/605,520  
Amdt. dated August 25, 2006  
Reply to Office action of May 26, 2006

subroutines are finished" as stated in the limitation of claim 2. The Examiner's provided reference simply reveals that "a first process 242...sets flags to indicate possible problems" (Col 3 line 65-Col 4 line 2) and "The backup controller software 36 does not fail a backup job based on the flag information" (Col 9 lines 21-22). Therefore, Gold does not explicitly teach the first process 242 finishing its routine prior to setting the flag information. The first process 242 of Gold may thus intermediately sets various flags before completion of the subroutine, allowing simultaneous operation of both the first process and the backup controller software 36. This scenario is in contrast to the principles of the present invention, as the present invention teaches completion of the higher level subroutines before engaging of the recovery operations for optimal subroutine management conditions and this is claimed in claims 2 and 15. In view of the above reasons, applicant respectfully requests reconsideration for the allowance of claims 2 and 15.

15

Regarding claims 3 and 16, applicant points out that these claims are dependent on claims 1 and 14 respectively. Therefore, should an allowance be made for claims 1 or 14, applicant respectfully requests reconsideration for claims 3 and 16 being dependent upon claims 1 and 14.

20

Regarding claims 6 and 19, applicant points out that these claims are dependent on claims 1 and 14 respectively. Therefore, should an allowance be made for claims 1 or 14, applicant respectfully requests reconsideration for claims 6 and 19 being dependent upon claims 1 and 14.

Regarding claims 7 and 20, applicant asserts that Gold does not teach "each

Appl. No. 10/605,520  
Amdt. dated August 25, 2006  
Reply to Office action of May 26, 2006

lower-level subroutine used for calling at least a next-level subroutine" as disclosed in the limitations for the above claims of the present invention. The Examiner has stated in remarks for claim 1 that "*The lower level subroutines are the third process*" and has additionally stated in regards to claim 7 that "*The next-level subroutines are the process for displaying the error message to the user...*". Applicant points out however, that Gold does not teach the third process calling the process for displaying the error message, as suggested by the Examiner. Gold teaches "a third process 246 prioritizes the high level codes" (Col 4 line 5) and that "For every flag that is set, the backup controller software 36.. notifies the user...displaying the specified error message" (Col 9 lines 5-8). Therefore, it is clear that the setting of the flags initiates the next-level subroutine of Gold. However, the third process does not set the flags, it merely prioritizes the flags set by the first process (Col 3 line 65 – Col 4 line 2). As the third process of gold does not set the flags to initiate the error message to the user, applicant asserts that Gold does not teach "each lower-level subroutine used for calling at least a next-level subroutine". Reconsideration of Claims 7 and 20 are respectfully requested.

Regarding claims 8 and 21, applicant points out that these claims are dependent on claims 7 and 20 respectively. Therefore, should an allowance be made for claims 7 or 20, applicant respectfully requests reconsideration for claims 8 and 21 being dependent upon claims 7 and 20.

Regarding claims 9, 11, 22 and 24, applicant points out that claim 11 has been withdrawn from consideration, and claim 24 has been cancelled. Additionally, claims 9 and 22 are found dependent on claims 7 and 20 respectively. Therefore, should an allowance be made for claims 7 or 20, applicant respectfully requests reconsideration for claims 9 and 22 being dependent upon claims 7 and 20.

Appl. No. 10/605,520  
Amtd. dated August 25, 2006  
Reply to Office action of May 26, 2006

Regarding claims 10 and 23, applicant points out that these claims are dependent on claims 7 and 20 respectively. Therefore, should an allowance be made for claims 7 or 20,  
5 applicant respectfully requests reconsideration for claims 10 and 23 being dependent upon claims 7 and 20.

Regarding claims 12 and 25, applicant points out that these claims are dependent on claims 1 and 14 respectively. Therefore, should an allowance be made for claims 1 or 14,  
10 applicant respectfully requests reconsideration for claims 12 and 25 being dependent upon claims 1 and 14.

Appl. No. 10/605,520  
Amtd. dated August 25, 2006  
Reply to Office action of May 26, 2006

Regarding claims 13 and 26, applicant points out that these claims are dependent on claims 1 and 14 respectively. Therefore, should an allowance be made for claims 1 or 14, applicant respectfully requests reconsideration for claims 13 and 26 being dependent upon claims 1 and 14.

Regarding claim 14, applicant points out that claim 14 is a device claim analogous to the independent method claim disclosed in claim 1. Therefore applicant asserts the rationale provided for claim 1 equally applies for claim 14. In particular, applicant points out that Gold does not teach "a plurality of higher-level subroutines, each higher-level subroutine used for calling at least a lower-level subroutine to control the hardware circuit to execute operations corresponding to the lower-level subroutine...". As Gold does not show a direct relationship of either the first process 242 or the second process 244 calling the third process 246, the sequence of processes in Gold can therefore operate in an arbitrary manner, which conflicts with key benefits achieved through teachings of the present invention as described above. For further details, please refer to comments provided for claim 1. Reconsideration of claim 14 is respectfully requested.

20

*Claims 4 and 17 are rejected under 35 USC 103(a) as being unpatentable over Gold et al. in view of Sim et al. (US Patent 6785212B1)*

Regarding claims 4 and 17, applicant points out that these claims are dependent on claims 1 and 14 respectively. Therefore, should an allowance be made for claims 1 or 14, applicant respectfully requests reconsideration for claims 4 and 17 being dependent upon claims 1 and 14.

Appl. No. 10/605,520  
Amdt. dated August 25, 2006  
Reply to Office action of May 26, 2006

***Claims 5 and 18 are rejected under 35 USC 103(a) as being unpatentable over Gold et al. in view of Okada et al. (US Patent 6530034B1)***

- 5        Regarding claims 5 and 18, applicant points out that these claims are dependent on claims 1 and 14 respectively. Therefore, should an allowance be made for claims 1 or 14, applicant respectfully requests reconsideration for claims 5 and 18 being dependent upon claims 1 and 14.

10

Sincerely yours,

Winston Hsu

Date: August 25, 2006

Winston Hsu, Patent Agent No. 41,526

15 P.O. BOX 506, Merrifield, VA 22116, U.S.A.

Voice Mail: 302-729-1562

Faxsimile: 806-498-6673

e-mail : [winstonhsu@naipo.com](mailto:winstonhsu@naipo.com)

- 20 Note: Please leave a message in my voice mail if you need to talk to me. (The time in D.C. is 12 hours behind the Taiwan time, i.e. 9 AM in D.C. = 9 PM in Taiwan.)